Yi2
7397
F 16

17

Lymphatics cont^d from 664 to 672

Secretion — 672.
Lymph — 682
Saliva — 683
Gastric Juice — 683
Pancreas — 684
Synovia — 684
Urine — 686
Semen 688.
Milk —

Excretions 693.
Tears 693
Bile — 694
Perspiration 698
Nutrition 707

v the Urine, and Mercury excites a
Salivation when applied in the form of
an excitement to the external Surface
of the body. —

Observation to think not
in medicine, to
unassuming leaders
= ments, and to look
for discoveries in
more important
that of the Lymphatics

67 too highly
of our Ancestors
to be modest and
our present attain =
= forward to posterity
the Animal Oeconomy
& useful than even
.—

Of Secretions

In considering this subject I shall in
make a few remarks upon ~~the~~ Secretion
in general: ~~and~~ 2 then I
shall ~~then~~ consider the natures
of each of the secreted liquors, & afterwards
describe each of the excretions.

And here I must confess I feel disposed to
make a pause. ——— After contempla-
-ting the subject for many years, I confess
I know but little more of it than I did
the year after I began the study of
Medicine. However long before I shall
give you all the important facts that
relate to it, and if I am not able to
give you a just theory of it
——— Who knows but a

I shall begin by explaining that the growth & support of the body is kept up by a process which might be called secretion — that is all the solids of the body have a power of assimilating the matters which nourish them, to their own nature, but our business at present is to describe that kind of secretion only which goes forward in the glands.

single ~~thought~~ thought thrown Out in the
Course of this inquiry, may serve as a
Clue at a future day to guide some
One you into a more successful inves-
=tigation of the Manner in which it is performed
~~Disease~~ Disease
~~Brigade to proceed to~~ I refer you to Anatomy for the
names & definitions of the different
Species of Glands. — They appear to
be a very important part of the body,
- hence we find them belong to the
botanical - the Lymphatic - and
probably to the Nervous System. It
is common to add - to the Nervous
System likewise for the Liver is supposed
to be a Nervous Gland. — But I would
rather
~~rather~~ suppose that at this is not the
~~the~~ a large
case - and that the Liver is ~~an~~ ex-
=cretory Duct, than instead of a true Salivary Gland

as I shall say hereafter

The structure of the glands was supposed formerly to be cellular, but the injections of Ruysch prove them to be vascular.

The liquors which are secreted are of a very different nature. - They are watery as the Urine - viscid as mucus - & coagulable as Lymph & more thick, as Semen - & Wax - and - Fat. It is probable that the secretion of Urine both a Lymph & an Excretion. Therefore should be considered as

all these liquors so various in their consistence, and uses, are formed originally from an apparently homogeneous fluid - viz: the blood.

In what manner is the question now before us. —

Various opinions have been proposed to account for the change in the blood into the secreted liquors, - such as the difference of diameter in the size of the orifices disposing them to admit particles of a certain figure, & to reject others, - but this hypothesis is presupposes, that the matter of the secreted liquors preexists in a perfect state in the blood - which has not been demonstrated, by any of the Advocates of the doctrine.

Another opinion - is that the blood is changed in the glands by means of a fermentation sui generis. To this it has been objected that, if this were the case, the quantity of a secreted liquor would

be encreased, [illegible] when ever there
was an over [illegible] of a secreted liquor
as of Bile. or of the Urine — or if
they acted as ferments, they would change
all the fluids they met with in their own
into [illegible] fluids of the same nature
with themselves. — but this Objection has
no force, for a vessel of a peculiar form
may be necessary to produce this fermen-
-tation. The Analogy of the formation
of Variolous matter favours this Opinion.
— a small portion of it [illegible] multiplies it-
-self [illegible] from the
assimilation of a fluid which certainly
did not contain a single particle of
original matter in it which resembled
the small pox. It is remarkable further
that this variolous matter like the ferment
of a secreted liquor, requires a peculiar

I ~~[illegible]~~ mentioned something like this
in Dr Prout's exp.ts - Dough fermented
in the Stomach - &c

place for it to reproduce itself. If
swallowed with food, it produces
change in the salivary, or
mucous liquors of the stomach, or
bowels - may pass - if injected into
the blood, it does not change it into
a
various matter, or produce any all
perceptible alteration in its qualities..
- It is essential to its multiplication
of itself - that it should be confined
to the skin. —

The Analogy of the formation of
bitter & sweet
different fruits from the same Water
seems to favour this mode of the produc=
=tion of varied liquors. — If

we are told that different degrees
of action of the Arteries & nerves whether
produced by the emotions of the mind,

or by Other causes, about the secretions,
rendering them thicker & thinner in
some Cases, and more or less Abundant
in Others. - all this is true, - but is
not fermentation greatly influenced by
the circumstances of motion & rest as
to the ~~Constitution~~ Qualities — consistence, & quantity
of the matters which are produced by
it? —

When I speak of the production of
new matter by fermentation, or by
secretion — I wish to be understood to
mean only, a new aggregation or
Arrangement of Matters which had
preexisted in some Other form. —

Leibnitz supposed that there were
but ~~four~~ ~~original~~ forms of matter, Go to 681

VI Modern Chemists have gone further, and supposed that all the different forms of Matter are produced by but two elementary Substances Viz: Oxygen ~~[illegible]~~ Metals.

V. It is a curious fact that the component matters in certain ~~[illegible]~~ poisonous & wholesome plants & also of other Substances are the same in Quantity - but differ in Quality - The Hemlock and Cabbage - also in the poison of the Viper & gum arabic. The difference in their qualities seems to arise wholly from a difference in their arrangements.

ll that the almost infinite Variety
of substances which we see in the world
were all produced by different Combi=
=nations of these original forms of
matter. The amazing combinations
which ~~the~~ original colors & tones
are capable of receiving by Art, all
of which appear in prisms ~~[illegible]~~
specifically different from each other
give some Color of probability to the
Opinions of Leibnitz & the Alchymists.
The apparent
transmutations of bodies which Che=
=mistry has taught us, and ~~the~~ parti=
=cularly the late discoveries respecting
the composition parts of Waters,
seem to add fresh weight to the

V The Action on the different Secretions
Depend are of a precise nature, & the healthy
Quality of the Secretions depends upon this being
always the same. Sometimes this Action is
transferred from one part of the body to another
in consequence of which the same results are Obtained
Thus Arteries secrete bone in blood vessels &c: &c
Dr Wells has lately proposed a new theory
hence Bile secreted on Skin in yellow fever.
upon this subject. He supposes Secretion to
depend upon a certain precise Action in the
Secretory Vessels, and that the same liquors are
secreted in Other parts of the body when
the same action takes place in them. Thus
he supposes the yellowness of the Skin in the
yellow fever is transient & partial to be
the effect of first a Change in the Capillary
Vessels as to cause them to resemble the Action
of the Hepatic vessels - Dr Senter relates a Case in
the Transactions of the College of Phys: in wh the
Stomach wh had the Vessels of the
Secreted Urine, &c of the
Skin had been changed so that something
like Bile was secreted in the Skin. It
takes place in the Vagina in Leucorrhoea

hypothesis. — It is remarkable that the more opaque the secretion, - the more unlike the liquor which is secreted is to the blood - as in the semen; - & the less opposed the secretion - the less unlike it is to the same of the liquors of the blood in general - as tears - saliva - and the lymph which is found in the cavities of the body. - The same thing takes place in fermentation, &c. - Old wine is an illustration of the former species of secretion. It scarcely shews any relationship to the fruit from whence it was obtained, while small beer partakes in its taste & qualities of all the ingredients from which it is formed. —

○ I have thus put before you a certain outline of this difficult question,

Menstrual blood is secreted by the Vagina instead of
=| ~~the Uterus~~ during pregnancy. ~~It is sometimes~~
~~to a translated Issue.~~ we certainly see in the
same vessels performing very different actions,
& very different results from in many dis-
=cases. as Serum Lymph — ploughs — and black
vomit from inflammation. ~~we see trans-~~
~~lated powers,~~ ~~they not translated functions.~~

~~I~~ shall only add that the most wonderful
Operations in the body are carried on
~~by~~ means of Secretion
a Case in which the
secreted bile, but
681
=Perhaps the ~~Lymphatics~~ as related by Dr Hunter
Stomach, and of milk
which I spoke in treating
Lymphatics, may have
a Secretion of the former
and of the latter in the

Dr Duncan relates
not only
the liver
appearance
Urine &
of Gravel in the
Stomach
the lungs of
upon the
the effects of
the Stomach,
so ?

The whole Scene must Soones or Lates
be laid open to us

The uses of the glands which constitute
secreted liquors are very great. They
are like Closets in a well furnished house,
which contain different kinds of
aliment for the tenants who occupy
it. But the uses of the secreted liquors
will appear more fully from
taking a separate View of each of them.

Lymph — Bile, pancreat. Juice.
Thy are Saliva — Gastric Juice —
Synovia — Chyle — Semen
Mucus —
Milk and Fat.
I last have hesitated in
admitting Urine among the secreted
liquors — Its analogy with other excre-
-mentitious liquors which are dis-
-charged from the body without the

p: 681

The actions or actions upon which the dif-
=ferent Secretions depend are of a precise
nature, and the healthy quality of the Secre-
=tions depends upon their always being the
same. Sometimes this precise action is
transfered from one part of the body to
another in consequence of which the
same results are obtained. Thus the Se-
=cretions secrete bone when the blood vessels
become Ossified, - and thus the vagina,
~~secretes blood~~ instead of the Uterus
secretes blood when the menses occur du-
=ring pregnancy. Mr Dumas relates a
case in which the lungs not only secre-
=ted bile, but assumed an appearance re-
=sembling that of the liver. ~~Palpitation~~ and

Dr Gastaldy relates an instance of ~~a child being~~
~~born with the stomach not extended~~
~~by air, and of milk in the stomach~~
~~extended by Dr Gastaldy, every~~ formerly mentioned
~~of the territory~~ by the kidneys in the
~~form of the breast in the latter~~
by Secretion of milk being transferred from the breasts
~~by glands~~ to the stomach of young.

It is certain different actions in the same vessels produce very different results. Thus in inflammation the same vessels, according to the stage we speak of ~~secrete~~ this actions secrete serum, pus, ~~water~~ the thoughs, water and the matter of the black vomit.

To enter ~~Let us proceed~~ this subject still more familiar to us, let us collect what was said formerly of the tension performing vicarious offices for

2

each other. I even supposed the medulla oblongata sometimes performed the office of the brain in exciting sensation, perception & ~~thought, &c~~ all the other operations of the mind. Why should not the glands, and all other parts of the body perform the same kind and neighbourly offices for each other? — For my part I see no difficulty admitting in this opinion, nor do I think it invalidates against the facts formerly mentioned of certain bodies such as bile and milk being absorbed by the lymphatics and deposited in the stomach and lungs. ~~Both processes are probably~~ Vicarious Secretion, and Lymphatic

translations are probably both alike true.

I mentioned formerly the sympathy between the eyes & salivary glands discovered by the ~~[illegible]~~ sudden increase of the secretion of saliva at the sight of food when the system is under the influence of hunger. Dr Sinks of Bucks County in this State informed me of an instance of sympathy between the eyes and breasts. A woman who had operated herself from her child for some month in order to wean it, became when the breasts had become dry & painful & plentiful of milk had a sudden restoration of the secretion as soon as she saw her child. I have since spoken to Dr Sinks: lifted up the curtain only of a difficult question,

V mucilage - albumen - muriat of soda, Phosphat of Soda, Phosphate of Lime - & Phosphate of ammonia. 80 parts of an but 100 are composed of water.

It has a strong attraction for oxygen, & retains so much of it that it will oxide O & Dif triturated in a mortar with it. It aprists oils in forming an oxid of mercury by trituration. It is the presence of oxygen in it that probably renders it some= =times an useful application to Sores. fasting Spittle.

It is much changed by disease - hence its smutish - saltish - and bitter taste. when exposed to the air, it putrefies & emits a most offensive odor. & produces the fœtor in it, that is produced by putrefaction. The fabric thus affected by mercury once poisoned a cat in this state in the yellow fever.

aid of excretory organs would have led me to have connected it with them, - but the Structure of the kidneys unfortunately forbad this natural arrangement. - They partake of the common properties of excretory glands.

1 Lymph - I spoke of the properties of Lymph when I treated of the lympha- -tics. - It is coagulable, but in a less degree than the coagula~~ble~~ting Lymph of the blood. That which is found in the Ventric- -les of the brain in this case is incapable of coagulating

2 The Saliva yields by a Chemical analysis Water - V 12 7/8 Saliva of Mucus secreted in 24 ~~hours~~ assists in promoting the dissolution of the ~~food~~ Aliment in y Stomach. + From disease it is probably like the blood, in a disposed state.

3

The Bile is formed in a peculiar manner. The liver in which it is formed receives its blood from a Vein, instead of an Artery. This blood from its slow & circuitous Course is highly charged with hydrogen & Carbon, which are to be got rid of to form the Bile and is otherwise better fitted to furnish the matter of Bile than Arterial blood. By Chemical Analysis from 1000 parts Gmelin Albumen which is the cause of its viscidity, an Oil which is united to its colouring, or bitter Principle - Soda - Phosphates - Carbonates - Muriate of Soda - phosphate of lime - ammonia - & according to some an Oxyd of Iron, & a small quantity of Sorchosine - all united with a great Quantity of water.

The colouring & bitter principle which is separated from the Bile when it forms Chyle, & afterwards becomes part of the Feces.

3 The Gastric Juice contains a considerable quantity of animal salt which yields a good quantity of Phos: acid. Of its strong dissolving powers formerly.

It appears to possess this power in different degrees not only in different animals, but in the different periods of life in the same animal. It is strongest in young people. It is influenced by diet. Those persons who feed for a while on meat are unable to digest vegetables, and vice versa.

4 The Pancreatic Juice is supposed to be of the same nature as the Saliva. — Its uses are not fully ascertained. — It seems to be that properly speaking Chyle is the effect upon the food of the Pancreatic Juice acts upon the fat or that liquor into Pancreatic Chyle.

It helps digestion on the food, in the same way that the Saliva in promoting its change

5 Muscles - is diffused thro every part of the body, - to facilitate its motion - from the resistance friction of the solid

3 The Gastric Juice contains a considerable
quantity of an animal salt which yields
a great deal of the phosphoric acid. I spoke
formerly of it its strong dissolving power in
treating upon Digestion. It possesses this
power in different degrees in different Ani-
=mals, and in different periods of human
life. It is strongest in young & in old people.
- It is ~~[illegible]~~ changed in its qualities
by diet. A diet of vegetables ~~[illegible]~~
~~[illegible]~~ Disposes it to assume the same
qualities which it possesses in ~~[illegible]~~ herbivo-
=rous & granivorous Animals, while a
diet of animal food imparts to it the qualities
=ties which it possesses in Carnivorous
Animals. I beg your attention to this
fact. I shall apply it in our Therapeutics.

4 The Pancreatic Juice is supposed to be of
the same nature as the Saliva. It seems to
act upon hepatic ~~bile~~ Chyle in the same
way that the Saliva acts upon the Ali-
=ment in promoting its Change into Sto=
=machic Chyle. ——

5 Viscera is diffused thro every part of the
body to obviate irritation from the friction
of Solid - p 684

V according to some Chemists no less than 11
different matters dissolved in water [These
are Urea [a so called by Fourcroy which is
a Syrup like, crystalizable
& Colouring matter, to which the Urine owes
its particular Odor, Color & taste, and ch W.
consists chiefly of Azote) & a gelatinous
Animal liquor 3 Muriates & phosphates of Soda,
& ammonia - hypersate, or United in a Sim-
-ple Salt, - phosphate of lime, - phosphate of
magnesia -, phosphoric, - Uric, & Benzoic acids.
The Urea combined with a certain quantity
of Oxygen is said to form the greatest num-
-ber of Calculi, but many of them are
formed, of different proportions of all the
different matters which enter into the com-
-position of the Urine, hence the impracticability
of discovering a Solvent for Calculi in the
Bladder when taken conveyed into the body
by the Mouth, or injected thro the Ure-
-thra into the bladder.]
Urine has been divided into 3 kinds.

bodies, as well as the irritation which
is created in tender parts by acrid liquids
& even Air. - Hence we find it in the
nose
Œsophagus - the Stomach - bowels - Urethra -
Vagina - and Eyelids. That in the nose
absorbs & abounds in oxygen.)
chiefly
(The Synovial fluid is secreted during
the night. It is interposed between bones
which move on each other. The waste
of this liquor in the course of a single
day is [illegible] evident by persons measuring
half an inch in height less every
night, than they measured in the morning
It contains fibrous matter - Albumen
muriat of Soda - Soda - phosphate of lime & water
(The Urine contains in large quantity
a finely attenuated oil
of Ammi Salt - with some earth. This
said to be
earth is a Calcarious nature, & contains

Watery from large quantities of Drink & Chylous
from a mixture of Chyle & Urinary from the
blood. such as is discharged after a few hours after eating
slow & oppressive secretion in the morning. The
~~& is often discharged so suddenly~~ = p: 685

go to opposite page of p: 686 ≠

[V ~~Bad~~ This is explained by Dr Darwin upon
the principle of retrograde action - But I
would rather suppose it was occasioned by
a temporary translation of the Urinary power of Secretion,
to the Stomach. Instances of this translation of Secretions were
from one part of the body to another is
mentioned in treating of Secretion.
~~not unnecessary~~. An example in

Diabetes.]-

The Glands performs double duty in
the Absence or suspension of the functions
in any one of them. Eg: ~~Liver & Diabetes~~
Hence follow Obstruction of Liver in Dysentery.

a portion of Acid mixed with it. Of the
more or less after when we come to treat of
the generation of the calculus. This gener-
-tion is influenced by many circumstances.
Heat opens the Emunctories it)
Liquors encrease it ~~and does~~ as to
create a desquamation but there is a passage
which conveys them directly from the
Stomach to the Kidneys & Bladder. This
certain that not only Urine, but even
gas Urinary gravel have been Dischar-
-ged by Vomiting.
In case of this kind
to the world by
-municated to the College of Physicians
in a letter from
of Philadelphia by Dr. Hunter of Belfast But
however the exercises of the Understan-
-ding and of the passions

[illegible] This sudden & wonderful increase of Urine, can be accounted for only, by admitting the ~~retrograde~~ passage of ~~to~~ Lymph ~~Lacteals~~ of the Lymphatics, by means of by absorption ~~& Lacteals~~ into the ~~bladder~~ urinary organs without ~~passed~~ mixing with the Circulation.

✓ It is the menstruum of all the fermented liquors. By distillation it yields phlegm, a Vol: Salt - a fetid oil & a large quantity of earth. —

≠ The Urine of Children is more bland than that of Adults. It contains but little of the phosphate of lime - owing to the demands of their little bones for it - In old men the Urine, is acrid, & abounds with phosphate of lime, from their bones having no more demands for it.

The Urine of Carnivorous Animals is more acrid, fetid, & smaller in quantity than the Urine of Granivorous & herbivorous Animals. — Diseases of the

practicly of the Urine. Studious people
are frequently obliged to rise often
to make water, and I shall not
you will find. I should be much surprised
if some remarkable cases of an
excess of the immense discharges of
waters from the influence of fear in
my plays. + disagreeable smell
& the semen has a ~~bad~~ ~~smell~~,
according to Mr Hunter
and a pungent taste. + The notion of its
being discharged from the testicles instead
of the seminal vesicles taught by Mr Hunter
in coition as
is altogether hypothetical. + It is supposed
to be absorbed in puberty, and to produce
by its action on the system those changes
which take place in the body at that
period of life - But I doubt the truth of
nearly
this opinion - Girls undergo
similar changes in their systems at the
same time of life - without the

kidneys are more common in Cold, than
warm Climates - owing to the great. labor
which the kidneys undergo from the frequent
diminution of perspiration by cold &
moisture; which renders them & thus
predisposes them to disease. kidneys
Alternate in their Action with the Skin in cold weather in
middle latitudes also. In summer with - the bowels & lungs.
By a Chemical Analysis it yields (a)
6 parts of animal mucilage 3 of phos:
=phate of lime - 1 of soda - & $\frac{90}{100}$ of
water. It is the soda which changes the
syrup of Violets to a green color. The
secreting quality of the kidneys is said to
depend chiefly upon its animal mucilage,
or as it might be called gelatinous
mucus. — It contains a number of
Animal salts in common with many
other animal fluids & the Juices of
Some plants. Its secreting faculty
was once supposed to depend upon them, but
Spallanzani has overthrown this hypothesis
by experiments c.

Agency of any such cause. Perhaps it
would be more just to ascribe the semen
previous
to the changes in the system, than the
changes in the system to the absorption
of the semen. — V

The semen becomes thick by stagna-
tion like many other liquors from the
absorption of its watery parts by the lymp-
hatics. — In intemperate venery
& after the practice of the foul
& detestable vice of Onanism — it becomes
thin & watery. I have heard of a
case in which blood was discharged
by that vice instead of semen. In old
men there is reason to believe that the
semen partakes of the acid quality of
all their Juices. In old age I have

From the rapid manner in which Urine after large quantities have been taken into is discharged ~~from~~ the stomach, & from its pale color and from the passage of the Colouring ~~matter~~ of Urine into the bladder after a ligature had been made upon the Thoracic Duct, formerly mentioned, it has been supposed there is an unknown duct which leads directly to the kidneys or bladder from the stomach. That duct was said to have been discovered some years ago by Mr Howe, but subsequent experiments led him to renounce his supposed discovery. If ~~he does~~ will not any such a duct does not exist, but many facts induce me to believe it to be necessary, and that the rapid passage of water, and other liquids from the stomach to the

bladder may be explained without it.
I shall briefly mention those facts.

1 A sudden and profuse discharge of
Urine is sometimes induced ~~by causes which~~
~~Do not act upon the stomach~~ when the stomach
does not contain any water in it,
1 by a paroxysm of Hysteria.
2 by great exercises of the Understanding.
Where is the student that has been engaged
in ~~a difficult~~ investigating a difficult
subject that has not been compelled to rise
from his seat two or three times in the
course of an hour or two in order to
discharge the contents of his bladder?
3 a sudden paroxysm of fear generally
produces copious & frequent discharges
of Urine.

4 a profuse discharge of Urine is often ~~a~~ a premonitory sign ~~=Such the Urine~~ of the plague & Yellow fever. This sign as mentioned in the history of the plague at Bassora, and I have observed several instances of it in the American yellow fever. A similar profuse discharge of Urine sometimes takes place in the yellow fever in its last stage. These facts being premised I proceed to remark ~~that in~~ explaining the reason why a large quantity of water in the stomach so suddenly excites a copious discharge of Urine; it will be necessary to recollect two things that were mentioned formerly, 1st That the whole Lymphatic System is a Unit, and that all its

parts possess a quick and extensive sym-
=pathy with each other, & 2ly that the fac-
=ulty which each Gland, or set of Glands
has of the absorbent Body of all the
Systems, is in a peculiar manner the
Centre of the Lymphatic System, and that
a powerful impression upon it by the fac-
=ulties of distention, acts every part of it
in motion, and disposes it to throw its
redundant contents out of the body, in order
to make room for the fluids that have
been taken into the stomach. The bladder
in this case is to the Lymphatics, what
the Spleen is to the blood Vessels, it is, their Waste
gate, and hence it is generally the receptacle
of and Outlet of the redundant fluids from
the body. I say generally, for they are
sometimes discharged in sweat by the

(a) The we are prompted to discharge
the Urine by the irritation it excites
upon the neck of the bladder, or by
the stimulus of distention from
its fulness. The Ischuria in cases both
induced by
is a real disease - hopefully created,
by
to prevent the Gravel & Stone by the
stagnation of the Urine, as also
many other distressing evils.
go to Secretion of Urine 1°!

pores, and, when this is not the case, they
are poured into the cavities of the body where
they create the different forms of Dropsy.
It is remarkable the discharge of a
watery fluid ~~is sudden~~ from the pores is
sometimes as sudden, ~~so~~ after filling the
stomach with cold water or any other cold
liquor, as it passes the bladder. ~~whether~~
~~not felt urine~~ This profuse ~~sweat~~ discharge
from the pores takes place in some instances
before the Cups of cold liquor is taken from
the mouth, - and yet who upon this
account, can suppose that direct
passages exist from
the stomach to every pore in the body?
- It can be explained only by running to
the ~~Electrical~~ Unity of the Lymphatic
Lymphatic System, and the electrical
Sympathy

(if I may be allowed the allusion) of all its parts with each other. —

It is because we have been so constantly in the habit of confining Unity and Sympathy exclusively to the nervous System, that so many of the phaenomena of the other Systems appear mysterious to us, or are ascribed to erroneous causes. Recollect yet: I said in treating upon the Nervous System, that the blood vessels, Alimentary Canal, the Skin and the Lymphatics all possess a peculiar & specific Sympathy as far as it relates to motion, independantly of the Nerves, and that it was as mechanical from the Continuity of similar matter, as the Sympathy of the extremities of the Roots of a Ship, or of all the parts of a Cell with each other.

To the Solution of the cause of the rapid passage of water from the Stomach

V told frankie, that other liqeors such as broth, malt liqeors, the liqeor of the Coco Nut all pass from the stomach into the bladder without undergoing any change in their qualities. I admit these and many similar facts, and ascribe them to the same ~~cause~~ voracious=ness in the depur=atories which dispose them to ~~take~~ devour and convey out of the system pus, bone, and feces in an undigested state this the same emunctory. The kidneys in these cases are so relaxed as to ~~pass~~ permit these liqeors to pass this ~~them~~ without under=going any change. They resemble in this change the liver which when diseased per=mits water and blood to pass thro it into the bowels.

24 to the bladder ~~to~~ which I have given, it may be objected,

1 That the Liquor discharged in these cases is unchanged in its qualities, ~~and~~ ~~particularly that which~~ ~~water has been taken in the~~ and that Stomach, the Urine has the paleness & taste when water has been taken into the stomach, of simple waters; and so it has when dis= =charged in a paroxysm of Hysteria, and of fear, and after intense study in none of which cases has it ever been supposed to come from the stomach. But we are

2 In the Transactions of the College of Phy= =sicians ~~of~~ is Philadelphia, there is an account by the late Dr Senter of Rhode Island of a person who ~~discharged~~ labored under a Suppression of Urine, that dis= =charged both Urine and gravel by puking.

In this case both the Urine & gravel it has been said must have come by a direct pas-
=sage from the bladder to the stomach. To this
I shall reply by recalling your attention to
the facts that were mentioned a
~~what has been said~~ little while ago of the secre-
=tion of bile and
in supposing that the vessels of the lungs
assumed the same specific action as the
vessels of the kidneys, and that they secreted the
Urine from which the gravel ~~the~~ was
deposited that were pooled up by Dr Sutton's
patient.

I see no difficulty
~~and of~~ Stomach

3 ~~Lastly~~ we have Horne's argument in favour
of a passage from the stomach to the kidneys
from the colouring matter of Rhubarb passing
into the Urine after tying up the thoracic
duct of a rabbit, has already been ~~disposed~~ objected to.
I have ascribed it to the colouring matter of the
Rhubarb ~~penetrating~~ passing into the stomach and passing by
means of the blood vessels directly to the kidneys.

V The Tears are watery - colourless &
of a saline taste. The tunic ~~of~~ lames of
the violet of a green Colour. In old age
their saline quality is encreased - hence they
often inflame the Cheeks. They yield by
a Chemical Analysis - water - mucilage,
Muriat of Soda - Soda - Phosphate of Lime &
Phosphat of Soda.

been informed ~~there~~ there is often the
a pain felt in the Urethra after ~~the~~
emission of Semen in Venereal connection —
probably from ~~an~~ an increased Acrimony in the
Semen. —

The liquor of the prostate gland partakes
of the nature of Mucus. — It is always
mixed with the Semen in its emission, but
for what purpose — has not been agreed
upon by Physiologists. — May it not
be to ~~its~~ the natural Acrimony of
the Semen during its passage thro' the
Urethra — and perhaps into the Vagina
afterwards? —

9th The Milk is a secreted liquor obtained
by a process very simple, and from a
part of the blood which has undergone
only a small part of the sanguiferous

process — viz the Chyle. It would seem
from this and many similar facts y:
fluids of a very different nature may
float in the blood, & Lymphatics without mixing with
it. The discharge of Urine by vomiting
& perspiration — and The discharge of
many matter by Urine formerly mentioned,
& ~~blood~~ of pus, - by all the enumerations, clearly
demonstrate that this is the case. - Nor
should we wonder at it - for no more
takes place here - that what we observe
every day in the relation of chemical
bodies to each other. —

The
~~Chyle~~ milk ~~is~~ seems to be
a Secretion from the fresh Chyle. It
partakes of several of the properties
of Chyle. It is probably to Chyle what

common
Lymph is to the coagulating Lymph,
or the Urine - to the Serum of the blood.

~~Possibly it is a Secretion~~.

That it is a Secretion from the Chyle
I infer from the immense quantity of it
which is frequently found
in a short time - Eg: LXti in 24 hours
in a Cow. That it Obtained from the
Chyle, I infer further from some ex-
-periments made by Dr Percival who
Obtained a large Quantity of Chyle by
tapping a person who had an ascites
from an rupture of a Lacteal vessel.
The Liquor yielded an Acid, & exhibited
all the other properties of Milk, all the
Other secreted liquors, yield a Volatile
Alkali in common with the blood from
which they are Obtained. —

V a whole family of Chester town drank
the milk of a Cow the day she sickened from
the bite of a mad dog, but no one of them
was affected. I have heard of two similar
cases one in Selby Eyres family. But I have
heard of a whole litter of pigs nine
in number being killed by sucking a bitten
Sow - perhaps only from Commotions
excited in their Systems by a febrile
State of the milk.

Milk is composed of three parts - viz:
Oil - mucilage - & water. The oil and
water are united by means of the mucilage,
so that milk may be called an animal
emulsion. - The oil yields - butter - the
mucilage Cheese - and the water is what
is commonly known by the name of
whey. - The oil & whey are of a vegetable
- the mucilage of an animal Nature.

The whey is of a saccharine quality. ~~de~~
~~Six of the~~ whey yielded in an experiment
64 grains of pure sugar. If all substances
are nourishing according to the quantity of
& mucilage
sugar & oil they contain, it is no wonder
= der that Milk affords so much nour=
= ishment.

The Secretion of Milk is much affected
by passions of the Mind. Children are

V turn back to V. p 64. The first remark I shall

VI I cannot dismiss ~~the history of the functions~~,
make upon the Secretions is
~~without taking notice~~ that the most impor-
=tant functions of the body are carried on
by them.
Besides those which have been mentioned,
it would seem that animal heat is a
the product of
a Secretion of Calorie from the air — and
even
that the formation of perceptions
from sensations — of perceptions
from sensations — of ideas from sensations,
and of thoughts from ideas — and even
of the fetus from the semen menstruum
& an Ovum are all the results of a
process of analagous to Secretion for all
those results are as dissimilar from the
causes which produce them as Bile,
Gastric Juice
Saliva, and are from the blood out of
which they are formed. In short — the

often convulsed from touching an angry
Nurse or Mother — But strange it is
to add — that the milk ~~of~~ is seldom
the vehicle of any disease to a child.
while the lips - tongue & mouth of a
child are sound - it often makes the breast
of an Nurse or mother ~~a~~ infected with the
that disease. V
venereal disease, without receiving ~~the~~
~~Fact~~ more a Section than extending
In the Fabios: transactions there is an
Acct of a Physician who ~~cured~~ declared
from the Authority of his parents that
he had inoculated his Brother while he was
ill with the plague, without receiving the
disorder from him. Where Children were
infected with the plague by their mothers
they probably receive it only from the
breath - & the breath will infect before
the ~~disease~~ case is felt in the system.

V 61

A whole family in Chester town drank the
years ago drank the milk of a Cow on the
days she sickned from the bite of a mad
dog; but no one of them was drowned by
it. I have heard of two similar
instances of the innocuous quality of
the milk of Cows while they were
affected with the hydrophobic fever.
In reply to these facts I have been told
a whole litter of pigs mine in number
were killed by sucking this Cows
under the influence of this disease. The
mortality in this case I suspect was
brought on by the commotions ex-
=cited in their System by the febrile

V wine has been discovered in the
milk after being taken by Infants
& no wonder the milk should induce
Convulsions & Death. —

state of the milk. I have known Deaths
from Children, Teething an angry
and Drunken Nurse. The ~~milk~~ convulsions Come
qualities of the milk in this case are
alternated by the rapidity of the Secretion
which is created by the Anger or by
the strong Drink. Lancom tells us that

Town ~~Ha~~ a review of the Secretions
it appears that the most important
functions of the body are carried on
by them. Besides those which have
been mentioned, there are I have no
doubt many others. It is probable Animal heat is a Nothing but a function
of Caloric from the Air in respiration
=rent parts of the body and from diffi=
and all the other forms by pressure Collision
of Stimulus.

the formation of the fœtus in utero has been supposed in like manner to be excited by the stimulus of the semen masculinum upon the female Ovum. In short every part of the body is repaired by a secretory process - that is the part to be repaired, assimilates the matter brought to it by a secretory vessel to its own nature. But some writers have gone further & said that Sensations are secreted from impressions - and hence their great dissimilarity mentioned formerly - that perceptions are secreted from sensations, - ideas from perceptions and thoughts from ideas. This opinion is fanciful, and without foundation. As well might we say the impression upon wax is a Secretion from the Seal, and

that the sound ~~is a Section~~ which issues from a bell or when struck with a hammer is a Section from it.

—I have only to add to this subject that there can be no Section in any part of the body without the presence of nerves. —

a

Of Fat

692.

This Substance is found in small cavities which have no communication with each other, and which are absorbed with the fat. It is in sickness, and in famine. ~~It is~~ It is the product of a secretory process. ~~It is~~ It is most liquid in the hollow parts of the body, and melts by exercise, hence it is seldom found in the hands and feet which are more exposed by exercise or labor than any other parts of the body. It abounds most in the mesentery, in the intervals between the muscles, more especially of the face, in the mamma, and in the orbits of the eyes. Its uses are
1 To facilitate the motion of the body.

2 To fill up certain cavities in the muscles
and particularly of the face & thereby
to add to the beauty of the body. That
this is the case we infer from persons
~~being~~ acquiring and losing beauty by the
encrease or diminution of fat in their
faces according as that fat adds to, or
detracts from ~~the~~ what Hogarth has
very properly called the line of beauty.
3 To protect the body from cold, being a
slower conductor of heat than flesh.
Sailors know the truth of this remark,
and hence they sometimes cover their
hands with grease in very cold weather.
4 It is said by the Chemists to furnish
the body with Hydrogen & Carbon to unite
dispose it to absorb more oxygen

3 Women have generally more fat
the greater laxity of their blood vessels from
than men from their sedentary lives. To the fat in their
sedentary lives. To the fat in their
bones they owe their having generally
more laxity than men.

Fat is ~~not~~ nearly universal in infants
and Children before they walk, owing
to ~~their~~ the ~~incabicity~~ nourishment greatility
of their food, and to their inability to
use exercise.

Fat is rarely to be seen in sailors
& soldiers, ~~on fatigue~~, owing to constant
labor and solicitude of their lives. It
is likewise a rare disease among over
Indians from their scanty aliment,
and hardy manner of living

from the Air, and from our Aliments. The
fat they say is united hard by its Union
with Oxygen. What makes this probable
is, Oils are hardned by it out of the body,
and hence they are called Oxyds.

5 The fat serves to afford nourishment
to the body in the Absence of appetite, in
sickness, and in situations in which Ali=
=ment cannot be obtained. The Omentum
I have supposed is the principal source
of the System for that purpose. I have
said fat is melted by exercise & labor.
This is most obvious in horses, after
hard running. In these cases in
this bulbis and discharged in their stools.
- It is also found in this blood when it is called by the

by distillation
V Twenty eight pounds of fat yielded accor-
-ding to Mr Creil ℥20 of ℥v and 40 grains of a
~~fluid oil~~ acid phlegm, ℥33, ℥iij and 30 grains of
~~Charcoal~~ an acid phlegm, ℥iij ℥i and 40
grains of Charcoal. Five drams & 10 grs
were lost by the means of distillation.

Series, Inotteneyrease. V

I shall hereafter consider ~~fat as~~ an undue quantity of fat as the effect of a disease, and enumerate all its causes. At present I shall only take notice of ~~a few~~ two facts connected with it.

1 When it takes place in early life it is generally attended with other diseases, ~~and often~~ or predisposes to them, - and hence premature obesity is seldom attended with long life. It is less disposed to shorten life when it occurs after 40 years of age.

2 Fat oxen and fat animals discharge less blood than such as are lean under equal circumstances. This has often been ascertained ~~by the~~ by butchers, poulterers and latterly by physicians. Two causes concur to produce this. ~~diminution~~

V 3 Women have generally more fat than
men from the greater laxity of their blood
Vessels, and from their leading more sedantary
lives. To the proper distribution of fat in
their forms, they owe their greater beauty than
men.

Fat is nearly universal in infants, and
children before they walk, owing to the
nourishing quality of their food, and to their
inability to use exercise.

Fat is rarely to be seen in Sailors or Soldiers,
owing to the constant labor and
solicitude of their lives. It is likewise a
rare disease among our Indians, owing
to their scanty aliment, and hardy manner
of living.

1 Where fat comes on suddenly before blood-
-vessels are formed to convey blood to it,
there is a great quantity of blood in the
body; there are in a lean person of equal
weight. and

2 Where the blood vessels & blood are increased
in the ratio of the fat, the blood vessels
are so pressed by the fat that they are
unable to discharge it in the same quan-
-tity as in persons of the same weight.

~~By fat is a disease, and as disease is always~~

I shall say hereafter that all the causes
of fat act by induced general debility.
This debility produces relaxation in the
muscles or flesh. when it occurs in
Domestic animals it renders their flesh
tender, and easy of digestion - hence the
lean of fat meat is always more easily

digested than the flesh of two animals
of the same age. Fat wanders the
flesh of old animals under the act of di=
=gestion - hence the planters in Jamaica
after working their own fields they have
last their little lazy age, fatten them with
boiled sweet potatoes, and thus render this
flesh as tender & pleasant as the flesh
of young animals. —

waste of every part of the body is repaired by a process - that is the wasted part assimilates the matter which is brought to it to its own nature.

~~To the Focus~~

V Alexander the great used to say after being satiated with human Glory, that it were not for his passion for ~~the~~ his women he should believe himself to be a God. He might with more propriety have considered himself as a mere man, had he recollected for a moment that ~~like~~ he held his life by the ~~Obliged to~~ humiliating ~~bestowed~~ tenure of being ~~the~~ obliged to ~~forming~~ ~~is to~~ discharge from his bowels ~~that~~ every day ~~bestowed~~ in common with others ~~over~~ that ~~bestows~~ divine mass of matter we call Feces.

Of the Excretions.

~~These~~ In the excretions I include ~~the~~ Fæces - Bile - and perspiration. To these some add Sweat - but this is only a
Insensible
preternatural discharge of the inner:
-sible perspiration. —

V ~~Of the Fæces~~ ✠

I before mentioned that they were precipitated from the Chyme in the Duodenum by the effusion of the Bile — from which they derive their color. They afterwards pass into the Lower bowels, protruding in their way. They excite to a discharge by their weight or stimulus

The Fæces contain a large quantity of Sulphurated Hydrogen gas which is said to be inflammable. It is this hydrogen ch: w: sometimes tinges Waters of a Dark Color when diluted they tinge ms Syr: vj V: grain.

V To the Septic parts of the blood, the
Lymphatics add their impurities abso-
=bed from the faces and probably from
all the decaying parts of the body. It is
no Objection to this Theory first suggested by
Dr Mc Clurg, that the Venous blood when
collected in the liver putrefied sooner than
blood taken from Other parts of the body. I shall
say presently that it acquires antiseptic
Quality & for wise purposes in passing into bile.
Thus Nitre - a powerful antiseptic is the
product of putrefaction. Thus too the Serum of
Scorbutic Blood is a powerful Antiseptic.

~~of further Acc^t of the use of~~ 694 Go to p: 697

~~For my Acc^t of the~~ Bile I refer you to the Lectures
~~on the functions of the Liver. Go to p 697~~
for many years
I have ~~carefully~~ considered the Bile
in part
as an Excretion. I was led to adopt this
Opinion by reading Dr M Lurgi's learned
& ingenious experiments on the Bile.
He supposes that the blood has a septic
tendency at all times - that its septic
parts ~~are absorbed and together with~~
the Putrid ~~the Septic parts of the~~ ~~become that~~
they are conveyed to the Liver where
This process which usually happens to be
after undergoing a short process they
called a Secretion being performed by means of the
are conveyed into bile. This Opinion
Lungs vein only
of Dr M Lurgi's is supported by the increase of the quantity
& activity of Bile in hot weather,
~~those~~ bilious
& in certain places in which there is
~~the always~~ the greatest tendency in

It occurs in the Gout, & even in strong emotions of the mind. It occurs from the increase of the circulation from exercise — hence the bitter taste in the mouth in the morning After a day of fatigue.

V But I consider its ~~still~~ properties as an Excretion to predominate over its properties as a secretion. In the Cuttle fish the Bile is discharged near the Anus. Here it performs none of the Offices of a Secretion. — It is this dark liquor which the Cuttle fish discharges when it ~~was~~ eludes the pursuits of an enemy.

I said — that ~~the pancreatic~~ suppose the pancreatic juice mixed with the Bile. May it not be to blunt its acrimony when it has absorbed too much ~~acrid~~ matter from the blood & fauces?

the fluids to putrefaction. +

The bitterness of the Bile proves

hence its ~~antiseptic~~ being the product of a septic

process. — hence find a taste exactly

like it in a rotten or putrefied ~~carcase~~ ~~rotten~~ ~~vegetable~~

apple But Dr M Leay's discoveries do

not stop here. He supposes the bile when

formed, to act as an antiseptic upon

the fluids with which it is mixed in

the alimentary canal - and hence it

is found in the greatest quantities in

hot weather.

~~Most diseases when we are most liable~~

~~to putrid diseases.~~ — In performing this

office, the bile partakes of the nature of a ferment.

This wonderful transmutation

of a ~~beatles~~, the stopping of putrefaction

into ~~is the~~ a principle to Neutralize =

= trefaction,

has many Analogies both in the natural & moral world. Thus Dirt the product of putrifying animal & vegetable matters preserves Wheat from putrefaction & the green mossy substance which [illegible] by Stagnating Water, in summer is a vegetable, which yields pure dephlogisticated Air, which corrects and destroys the impure miasmata of the Stagnating Water. In the moral world Analogies of evil using evil are too numerous to be mentioned. —

However simple this theory may be, I confess I have admired it more than many of the more striking phe=nomena of the Animal Oeconomy. In contemplating the Liver, I have beheld

v The peristaltic motion of the bowels
is ~~kept~~ assisted by the stimulus of the Bile -
hence we find costiveness to follow the
~~destruction~~ suppression of its discharge in the Jaundice.

The Other Diseases of the Bile will
form an important part of
Our pathology ~~]~~
a yellow - but a green ~~a~~ a black color
in the blood. — hence the yellow, green
& black color Observable in y Skin.

to compare it to a manufactory of
Sal Ammoniac, in which the bones-horns
& other putrid ~~cases~~ Offals of Animals
are collected, and changed by means of
certain chemical processes, into a beau-
tiful medicinal salt. The ~~information~~
last in ~~the~~ forming her antiseptic
~~of the bile differs~~
Matter, without an offensive smell.

~~How~~ How wisely are all the functions ~~contained in Botany~~
part of the human body administred! &
how many lessons may be learned from
them of the most ingenious & profitable
Oeconomy Natural
Cystic of the Bile

The color of the Bile is yellow. It
sometimes acquires a green color by its
mixture with an acid in the alimentary
canal. — It becomes black in malignant
bilious fevers. The passions of the mind have

V people are disordered only from the indulgence of angry passions. It is one of the waste gates of ~~the~~ excessive impressions.

The strength of the system (to resist any to excess the passion of anger) is increased by the stimulus of the Bile on the Alimentary Canal.

Hydrogene gas, ~~commonly called inflammable air~~ artificially upon the Liver. ~~This was formerly~~ proved. I shall say hereafter that intemperate people are subject to a morbid ~~secretion~~ excretion of Bile. May not this ~~flowing~~ to the Hydro. gene contained in ardent spirits acting in like manner upon the Liver? This idea was first suggested to me by Mr Cooper of the hospital. — Dr Darwin.

a great effect upon the exertion of Bile, particularly Anger. Hence an angry is often called a Choleric man. I knew a young man in this city so much irritated by an insult in a friend's house which he could not instantly resent, that he retired into an alley, and relieved his feelings by discharging a gill of bile from his stomach. The livers of mad dogs

The Bile yielded by chemical analysis go back to p. 683 of Fat a large quantity of bile, some water & an alkaline salt. Its peculiar properties quality is altogether hypothetical. Fat - is supposed to be ~~a secretion~~ - its solidity is owing to its being combined with Oxygen. This gas we know renders Oils solid as I have before out of the body. Hence they are called Oxyds. It is a Corpse de reserve to the System, serving to nourish it in sickness. It likewise serves many Uses in the body. It defends from cold, & when moderate renders the body more limber.

speaks often of the connection of Gout & diseases in the Liver - and derives the former from the latter. It is much more natural to derive the diseases of the liver from the same causes which induce Gout, particularly the intemperate use of ardent, and fermented liquors.

Marsh miasmata affect the Liver specifically. Hence the morbid state of that Viscus in all autumnal bilious fevers, & hence the morbid phenomena which are exhibited by the livers of cattle, hogs, sheep, & even poultry in the fall of the year in a sickly season. —

V. says he collected 30 grains of this water from his arm in the course of an hour. In this cap^t there was a fallacy as I shall say presently.

Perspiration

The first Question that occurs upon this Subject, is - ~~This~~ How do we know that any matter of any kind is discharged by the Skin, since it is not perceptible by our Senses. 2 I answer by first washing the Arm, and then holding it for sometime in a long Cylindrical Glass Vessel. The Vessel soon becomes dim, and if the Arm be held long enough in it, small drops of water will be seen to fall to the bottom of it. Mr Cavendish has ~~But~~ further, by means of certain Glasses this perspirable matter may be seen issuing

of the Cystic Bile.

The natural color of the bile is yellow.
It sometimes a green color by its mixture
with an acid in the Alimentary canal.
It becomes black in malignant fevers.
when it is absorbed; it ~~sometimes~~ im-
-parts not only a yellow; but sometimes
a green and even a black color to the
blood and the Skin. ~~in~~ the black jaundice
as it is called is occasioned by the absorption
of black bile.

I said formerly that the Cystic bile
by its Stimulus upon the bowels preser-
-ves costiveness. It likewise imparts Strength to the
whole System by its Stimulus upon the Alim^y Canal.
Its Quantity is greatly increased
by the passion of Anger. The livers of mad
people are disordered in consequence of the

indulgence of their angry passions, — the liver ~~being~~ is one of the waste gates of escape impressions upon the mind.

The bile yields by a Chemical Analysis some albumen which is the cause of its viscidity, an oil which is united to its coloring or bitter principle, soda, phosphates - Carbonates - muriate of soda, - phosphate of lime, ammonia, & according to some Authors an oxyd of Iron, & a small quantity of saccharine matter - all of which are united with a small quantity of water.

The Colouring and bitter principle ~~is~~ is seperated from the bile, when it mixed with the Chyle, and afterwards becomes part of the Feces. —

~~to be capable by means~~
~~of preserving admitting the different kinds~~
Of Air into the body. Dr Alexander.

Dr Hallen says he once saw it Discharged from the Jaw and fingers in a Cave,
and Winslow says he saw it ascending
from the naked head of a man. It is
seen ~~often~~ with the naked eye issuing
from the lungs in Cold weather.

from the body, and with a force ÿ. 3 ves
carries it four inches in a strait
line from the vessels in which it is
it. ~~The pus was~~ ~~contained by~~

The 2d Question is, - Is the perspirable matter a secretion, or is it discharged a simple exhalation from the extremities of the Arteries.[2]

Upon this Subject there are two Opinions.

~~The first is~~ ~~the~~ ~~opinion~~ of its being a secretion ~~is~~ was ~~first~~ held by Malpighi, but has been opposed by several experiments made by Ruysch & Hermann Boerhaave. The latter injected warm water into the Axillary Artery, & distinctly saw the previously softened by warm water dead body thro'

V Carbonic acid gas. whether this gas be emitted from the pores, or formed after it is discharged by the union of Carbon, with the oxygen gas of the Air, ~~he dot be~~ is uncertain, but it possess like the Carbonic Acid gas the property of extinguishing flame.

V Dr Klapp; experiments upon it which he ~~he~~ kindly put into my hands, prove that this Salt in the healthy State is neither an Acid, nor Alkali. He proved further ~~from~~ by experiment that it contained no ~~of~~ astringent matter in it. Perhaps its saline taste may be owing to its partaking of a morbid quality from the disorder of heat or fever?

~~of Dropsy~~ it discharged in ~~drops~~ ~~of water~~
drops thro' the pores of the skin a perspiration.
= tiny Opinion ~~probable~~ from which fluids in a
3 what is the nature of this perspira=
= tion matter? — I answer that it con=
= sists ~~of solid matter~~ of water. This is
obvious from the experiment made
with the Cylindrical Glass formerly
When thus obtained, it is limpid & tasteless:
mentioned. 2 Salt ~~This is solid~~
also the phosphate of lime & urea.
~~It is solid matter~~ It is some=
times perceived on the back of the
hands, & often perceived on linen
that has been worn for some
time. ~~Perspiration~~ ~~includes~~ ~~without~~ not only from its fluid
with the matter which is discharged
from the lungs, but from actual

But this is not all — The arm held for
some time in a glass of lime water sud-
it turns bid — in the same manner as the
It also ~~is called~~ the blaze of a candle
Oxygen ~~Carbonic~~ gas does. It is
This gas when confined under linnen for two
or three weeks that produces the Jail, Ships, or
hospital fever.

And contaminate the air much more
than in persons who do not work. It has
been proved that ~~if~~ watermelons do not
~~any~~ corrupt the air ~~for~~ so soon as
two carpenters under equal circumstances
of room, time, and ~~too~~ labor.

In Italy it is $\frac{5}{8}$ of what is taken
into the body. in England Dr Kirl says 33
ounces in a day

experiments. A Candle ~~A~~ blazing under bad Circumstances
means the skin in a smoking - suddenly
extinguishes the blade. ~~of a candle~~

3 ~~A~~ a certain ~~Odor~~ is said to be Derived from a
Thus ~~Odor~~ peculiar Oil.

~~It is essential to the perspiration~~ In hard working people it is of less
~~his nature~~, It is different in different
ages - ~~nations~~ - Individuals - Hence
Dogs discover ~~their~~ masters by their Perspira=
=tion tho' it be blended with the perspiration
of a thousand persons. I mentioned for=
=merly ~~that~~ a fact from de Lat of a
man whose skill was so acute as to

V It is much influenced by diet. The Brahmins in the East Indies who live wholly on vegetables, complain much of the fator of the breath & perspiration of the Europeans who live on animal food. — Even fœces derive a fator from the smallest portion of animal food. This ceased in Dr Roan's wife — in a cancer of her breast. Do in yellow fever and of others —
The smell in a Church in Greenland was insupportable to many Strangers from the inhabitants feeding on rancid whale oil.

La [illegible] Spalanzani of mice in steam me that he dried them a quantity of time by which they afterwards be distinctly perceived in his perspiration when he came near the fire. This is an important fact

distinguish a virgin from a married woman only by her perspiration!

After the watery & volatile salt is discharged from the pores, - a glutinous matter remains on the skin, which has been mistaken for oil, and has been derived from certain glands called sebaceous - but no such glands are to be found on the skin, - the residuum of the perspirable matter is abundantly sufficient to preserve a due softness in the skin. ~~This~~ This matter should be often washed off in summer. The Ancients did it with kali - not soap. by Lucat discharged from a different set of vessels from the perspirable matter? I answer no. It arises only from a relaxation & dilation of the Arteries which

Fœtid Sweats like breath - distressing. - See Gen: Blackburn
It shows the length of time in which the
seeds of a disease may float in the System
without exciting the disease. Miasmata
from bodies 10 days, 20 days, - I believe much
longer. Saliva of a rabid Animal many
months.

Sweet
V ies in many different forms. They are 1 ~~putrid~~
~~just as~~ as in the Diabetes. 2 Acid - Chapotall tells
us of an Ammonia being formed by a patient
washing his hands in a Solution of Potash.
3 Saline - as in harvest labors 4. putrid, or fœtid as
in malign[t] fevers. These fœtid Sweats are conf[d] chiefly
to Amn pits - Defect. Sometimes induced by animal Diet
in persons infected with miasmata of yellow fever. 5
Cold. 6 Clammy - 7 yellow - after yellow fever &
bloody - These arise from great pain - & pleasant at the
same time as stimulating as to induce them.

11 In Italy it is found ~~be~~ 3/4 of all that is
taken into the body. Mr Legrand & Mr Larrif[r]
confined a man in a silk bag varnished
with Elastic Gum so as to be impenetra-
-ble by Air & water, with an opening at
the mouth. They found that he dis-
-charged 78 grains of pepsin: matter in

discharges perspirable matter This
What is varied by many causes. Over half!
6 What quantity of matter is discharged
from the body by perspiration in 24 hours?
Answer - 1 or more than is discharged
by the Urine and stool. Great
pains have been taken to ascertain
this Question!
But it will be difficult to do
this Until all the circumstances which
influence it can be reduced to certainty
For
Cases: - It is different in different
Ages, Seasons & Countries, - also in diff=
=ferent classes of people. Where a moderate
quantity
of Aliment and drinks are taken
in a day; it is generally in
in England
healthy persons About 33 Ounces.

a Minute, or a much greater quantity of Bi
ddy Tea in a day.

6 V Dr Rutty informs us - it is greater
~~The~~ 9 hours in bed, than in 15 out of bed
~~This is contradicted by~~ It greater; ~~experiment. For:~~
~~same the great Advantage of lying in bed in~~
~~hospt Dr Rutty meant~~ ~~from the beginning~~ Cold & Fevers. Same advantage
of lying a bed & of ~~the beginning of~~ wounds & people sitting up.
regiment &
4 It is greater after divided meals, than
after two or three full meals in a day.
Hence the advantage of advising small
& frequent meals to weakly people.
5 ~~V~~ It is encreased much more by Drinks
than solid food.
7 It is greatest during Digestion.

2 It is different in summer & winter. ~~He~~
much more is Discharged in the former,
~~in the greatest quantity insensible~~
& the latter in the Cooler Season - and
~~& Is the least discharged in winter.~~
- over to p: 705

~~It~~ is different in the Sleeping and
waking State. Double the Quantity
is discharged in 8 hours in Sleeping
the above the same time in the
waking State.

3 more is Discharged between the
5th to the 8th hours after
sleeping, ~~different as much is discharged~~
~~than~~ between Sleeping & the 5th hours.

4 Motion - Rest - Passions of the Mind -
the gratification of the Venereal appetite
- different drinks & Aliments all in-
-fluence the Quantity & the matter
which is discharged by Perspiration.
~~& Urine perspire Depraved~~

1 It is different in different ~~people~~ ages, seasons and countries, also in different Clases of people.

2 It is different in different seasons, more is discharged in Summer than in winter.

3 more is discharged between the 5:th and 8:th hours after sleeping, than between supping, and the 3:d hour.

4 It is greater after divided meals, than after two or three meals in a day — hence I shall ~~have~~ in all my hereafter the advantage of advising frequent meals to patients when we wish to promote this discharge from their bodies. —

5 It is increased more by fluid, than by solid ~~food~~ food, hence the advantage of advising fluid Aliment in acute diseases, and that which is solid in Chronic diseases. the latter being generally accompanied with

debility, the diminution of the perspiration becomes an important indication in this case.

6 It is the opinion in women than in men, and hence one of the causes of their worthy disease. —

7 Dr Rutty says it is greater in 9 hours in bed, than it is in 15 out of bed. This is probable, provided the person do not sleep; for in the waking state, the centrifugal direction of the nerves & arterial influence still continues, while the recumbent posture of the body favours the discharge of the perspirable matter. This fact is of great application in medicine. It shows the necessity of lying down, or retiring to bed in febrile diseases, and of doing In this way I shall say hereafter the famous Player Madgin passed a life of 96 years without ever expressing a

2

single fit of sickness. The fact suggests to no
fruitless the Advantage of advising patients
in whom a copious perspiration would be
hurtful, to avoid lying down as much
as possible in the day time, and to pass no time
in bed, which is not passed in sleep. Sanctorius
says we perspire twice as much in sleep
as in the Waking state, but Dr Gorter
has contradicted this ~~fo~~ assertion by an
experiment made on purpose to decide
it. I said when treating upon sleep that
all the ~~Excretions to the~~ vessels that are
employed in excretion are less active in
the sleeping, than in the waking state.
This is evident in the bowels, and bladder.
— why should it not be so in the
vessels which discharge the perspiration?

V all this variety in the discharges of
pernicious matter from the body
may easily be accounted for by vol=
=ating that the vessels which discharge
it are under the influence of stimuli,
and of course their discharges as to
frequency and quality will be affected
by every thing that induces a healthy
Action in those Vessels.

It is possible that has been mistaken
for perspiration, ~~and that~~ by Santorius,
and that his experiment was made,
~~that~~ after sleep of a more than ordinary
morbid nature.

8 It is increased by exercise, and lessened
by rest.

9 It is increased by certain Aliments &
Drinks & lessened by Others.

10 It is increased by the stimulating passions &
lessened by ~~Others~~ such as are of a sedative
nature. The former increases it more than exercise.

12 It is increased by the gratification of
the Venereal appetite.

13 It is most copious in the hands &
feet and under the Arms, from their
being exposed to the most exercise and
friction. V

6 Lemnii an Italian physician
describes a sweat which resembled
Cholera it is smell & taste

14 There have many disputes concerning
the quantity of perspiration discharged in
a given time. ~~Dodart to Lower~~. It
varies I have said in different climates.
~~Lower~~. In Italy it is about 3/50
according to Sanctorius — In England 3/33
according to Dr Keil, and in the Ustates
3/41 according to the experiments of Dr
Hales in 24 hours — [60 ounces to a body]
Dr Comiks Lanks ~~experiments~~
place it at 3/4 when the body is at
rest, and 3/7/6 when it is in exercise.
But I have said there was a fallacy in
his experiments. He applied cold water
to the outside of the bottle in which he
placed his hand which precipitated the
moisture of the air in the bottle, with

the perspiration of his hand, and thus
added much to its quantity. It was
by obviating this error that Dr Klapp's ex-
periment ~~doubled~~ accorded so nearly with Sanctorius,
in Italy and Dr Keil's in England. Dr Klapp
found the perspiration from the lungs to be
of the same quality with that from the pores
of the same quality with that from the ~~lungs~~.

There is in the healthy state of the
body, a constant harmony between the
organs which discharge the perspirable
matter, and the kidneys & bowels. When
the former are suddenly obstructed, the
perspirable matter ~~is thrown~~ is discharged
by Urine or stool. It is only when the
solids are ~~disordered~~ in a state of ~~debility~~ debility
that this matter is retained in the system,
in which case it produces fevers and
fever. Sometimes it ~~produces~~

produces Catarrh when it misses its way
to the kidneys or bowels. In ~~Summer~~ Winter
this Catarrh is ~~the~~ much up dangerous
than in Summer, ~~for~~ in Consequence of
the ~~cooling~~ action of heat upon the
Skin imparting a more acrid character
to it - hence Summer Colds are often for-
more obstinate than Winter colds, &
=low'd by pulmonary Consumption. In
some instances the perspiration is thrown
upon the ~~head~~ Sensorium commune
where it produces what is called Coryza
When the eyes are always in a state of prediposi: ~~to~~ debility
In Egypt the perspirable matter is ~~thrown~~
often thrown upon them where it produces what Dr.
Ascherini calls a Coryza of the eyes. " thus
when ~~this~~ the perspirable matter stagnates
upon the Skin it produces ~~the~~ ~~pot~~ ~~pustules~~

has been called the jail, Ship, camp, and hospital fever all which I mean but one & the same Disease. —

The perspiration is liable to be changed by Disease in the following ways: 1st It ~~is said~~ becomes acid. Chaptal tells us a true case of Anuria was formed by a patients washing his hands in a Solution of pot ash. 2 It is Sabine as in vapers & Day Labourers. Dying persons.

3 It is clammy as in ~~the fever of Death~~.

4 It is yellow - as after the Crisis of the yellow fever. I once met with a case in which Yellow sweats continued a whole year after the patients recovery. 5 It is Fetid, not only in malignant fevers but in some Chronic diseases. I have lately been Consulted by letter in a case of the latter kind. Dly remedies were gentle purges,

✓ 6 Lancisi an Italian physician describes a sweet whale resembled wine in smell & taste.

and a Vegetable diet. V Palatable. It is
laborious. This is indeed by great Injury
of body and mind. Cases of this kind
are to be met with in many of our
Medical books. They establish the truth
of the history of our first parents in
the Garden, by shewing that it is agreeable
to nature, and that it accords from the
same cause in other people.

V Where the Drinks and Diet have
been moderate, the Quantity Discharged
by perspiration in 24 hours
is in a temperature of
About 70° is said to be about 750 in
according to Fameloises
Glass — about 733 in England & according to
Dr Keil —
from the experiments of Dr Klopp
744 in the United States. You see
I reject the extravagant quantity
of 97 & 7, when at rest & by 36
Better exercise mentioned by Mr Quik-
-Thanks. In collecting the perspiration
of his hand, multiplied by 97
applied Cold water to the outside of
the bottle which precipitated the moisture
of the air within the bottle with the
perspiration of his hand, and thus
add much to its quantity. It was
by obviating this error, that Dr

The whole of what has been ~~it~~ said may be easily understood by recollecting that the perspirable vessels, like many other eliminated part of the body are under the influence of Stimuli, and of course their discharges will be affected as to Quantity & Quality by every thing that induces a healthy action, ~~or that induces~~ in a direct or indirect debility in the perspirable vessels. —

There is in the body, a constant harmony between these vessels & the kidneys & bowels. ~~& bowels~~ when they are suddenly obstructed, the perspirable matter passes

Klapp's experiment accorded to nearly with Lavoisier's; in Italy & Dr Kiel's in England. Dr K. found the perspiration in 24 hours to be ~~used~~ 3 lbs. It is its qualities the same as from the pores. Sometimes it does harm by its Specific, or acrid Qualities. In

Winter the Obstructed perspiration is known upon the lungs - in the Summer - upon the bowels. This I remarked for: merly in speaking of the effects of Season upon the Sympathies of different parts of the body. when it stagnates a long while on the Skin it ~~causes~~ gives rise to ~~jail~~ - or hospital fever.

The perspiration is liable to be changed ~~in~~ by disease in the following ways. It is acrid. Chapital tells us an Amanuensis was formed by a patients washing his hands in a solution of pot ash. & saline as in persons who work hard. 3 clammy. 4 yellow. 5 fatid not only in malignant fevers. but in chronic as in Catheats case. & 6 bloody. This is indeed by great agony of body and mind, ~~the Bowels~~ record of which are to be met with in medical ~~of our~~ books, & they ~~suggest the~~ establish the truth of the history of our sensations

off by Urine or Stool. It is only
when the System is debilitated, that
this matter is retained in the System.
~~It is not the cause of the disease~~ Disease or fever it is
~~cause of cold and fever, but the~~
~~It is the~~ Effects of ~~general~~ debility first induced
upon the body. ~~It~~ generates fevers by
producing ~~plethora~~ fulness & congestion,
but ~~in a~~ without previous debility,
~~it on a disease~~ induced upon the solids,
I believe it can in no case produce
a ~~disease~~ fever; so happily is the balance
kept up between the passive & the
the kidneys & the bowels. But from
insensibly encroaching upon the bosom
of Pathology.

V By nutrition is understood the
completion of thanimalization.

= passion in the order, by flowing
that it is agreeable to the nature, and
that it occurs from the same causes
in Other people.

⊙ The former opinion was held by Buffon
Wartin, and several Other Physiologists.
It was likewise taught by D. Cullen.

Of Nutrition V

There are two Opinions upon the
Subject of the Nourishment of the body,
the first is, that it is carried on by
means of the Veines — the other that
it is carried on by means of the Arteries.

I once believed & taught this for many
years after my Master Dr Cullen, but I have
long also now
publickly rejected it, and am fully
satisfied with Dr Monroe that it is carried
on wholly by the Arteries. The
principal Argument upon which I maintained
had this & taught the former. His principal
Argument in favor of it
was founded upon a mistake viz
that the Chyle & Veines were probed
in a Ligature before the Arteries. Since

Vide one particulars from the Observa:
-tions of Dr Harvey. He says he discover
ed blood in a Chick in ovo before he
saw the sign of heart or blood vessels.

the Observations of Dr Wallen it appears that this is not the case. In an Egg 38 hours after incubation the Dr perceived the heart first projecting from the breast, — in 45 hours after incubation from he perceived its Auricle-Ventricle & Aorta — & their motion — & the blood beginning to grow red. The head was not distinguishable till the 51st hour — the eyes not till the 51, — at the 120th hour the brain was watery, at the 168th hour it looked like mucus — & at 131 hours spontaneous motion of the fœtus was first Observed. —— ~~This has diffused~~

From this detail of facts, it is evident that the brain & nerves are not evolved before the heart

V It is remarkable that no motion is
perceived in the ~~D~~ heart or blood vessels
Untill after the formation of red blood —
This is proved by Dr Harvey's
from which it would seem probable
stimulus of
that the blood gave the first impulse
~~is from the~~ to animal life. — Perhaps
the origin of
the order of life may be — 1 the blood acting
heart & by
on the Arteries — 2 the heart & arteries
acting upon the brain — and 3 by the brain afterwards reacting on the heart — arteries — and
blood — and afterwards each of them acting reciprocally and necessarily ~~acting~~ upon each other. In
still
this view of animal life, you see that
it is an effect, and that the heart
& Brain which have been supposed
the fountains of life or to be
to be endowed with a vital principle
are the reverse of this. They are moved

& Arteries — Dr Monroe supposes that they exist coevally with each other — — If I were obliged to decide upon their being coeval or prior to the brain or nerves, I would rather suppose they were prior to them, — at least in their motions. — It is certain that the Arteries are strong conductors of the Stimuli which produce life, — hence we find they move in sleep, — in old age, — and in many dis=eases in which the brain & nerves are feeble. And lastly they are generally the last upon which stimuli produce their last action in the extinction of life.

first
only from without by the stimulus,
of blood
and afterwards by all the external
stimuli that were formerly menti?
— From this view of the system Dr
I remarked formerly in the lectures on th: life
Valli has ingeniously called the
extremities of the nerves this origin,
and the brain their termination.
— I cannot help adopting the idea,
as far as it relates to the commence-
=ment, & preservation of animal
life. —